REMARKS

Claim Rejections - 35 USC § 112

The claims as amended are now limited to a method of increasing the yield of a plant by expressing invertase under the control of the *alcA/alcR* switchable promoter system. Clear guidance is given within the specification as to the production of a suitable DNA construct comprising an invertase gene under the control of the *alcA* promoter, and the *alcR* gene under the control of a suitable promoter (both 35S and patatin B33 have been exemplified). The skilled person could easily use the p35S-AlcR-pAlcA-Invertase construct for transformation of any plant that he or she so desired. Furthermore, it would be trivial for the skilled person to replace the 35S promoter driving AlcR expression with any of the tissue or organ specific promoters cited on pages 4-5 of the specification (line 24 page 4 to line 6 page 5). The production of such DNA constructs and their transformation into a suitable plant host is no more than routine experimentation, and would not place an undue burden on a skilled person in the art.

Construction and use of the *alcA/alcR* system to regulate expression of invertase in tobacco is exemplified on pages 12 to 16 of the International Application as published, and the use of the *alcA/alcR* system to regulate expression of invertase in potato is exemplified on pages 16 to 18.

The Examples clearly show that the *in planta* expression of invertase through the *alc* switch system can be regulated in a dose dependent manner (see Figure 3 and page 14 lines 19 to 22), thus demonstrating that the expression of the invertase can be controlled by application of an external chemical inducer. Figure 4 shows quite clearly that plant fresh weight and plant height is increased in tobacco lines expressing invertase. Figure 18 shows the size of tubers in potatoes that express invertase under the control of the *alc* switch is increased, leading to an increase in total yield of tubers.

This data provides evidence that yield is increased in two different plants using the method of the invention as defined in claim 1. A person skilled in the art would immediately recognise that this teaching may be applied to different plants, in particular those described on page 7 lines 9 to 16. In view of the above claim amendments and remarks, Applicant

respectfully submits that the invention is fully enabled across the entire scope of the claims as currently defined.

Claim Rejections - 35 USC § 103

Claims 1, 10, 11, 13, 14, 16 and 18 are considered inventive over Willmitzer *et al.* (US 5436394) in view of Caddick *et al.* (WO 93/21334) for the following reasons.

Whilst Willmitzer *et al.* teach that tuber-specific expression of invertase in potato leads to an increase in tuber yield, they also teach that the expression of invertase both in potato and in tobacco results in stunted plant growth and chlorosis (see column 11, lines 62-67). This will ultimately have a negative effect on the overall yield from these plants.

The Examiner maintains that it would have been obvious to use the switchable promoter system described by Caddick *et al.*, instead of the non-regulatable promoters used by Willmitzer *et al.*, to drive expression of invertase and thus obtain an increase in plant yield. However, as pointed out above, Willmitzer *et al.* teach that expression of invertase has deleterious effects on plants expressing invertase. Accordingly the skilled person in the art would not immediately recognise that the expression of invertase would result in an increase in yield. Furthermore, there is no teaching in either Willmitzer *et al.* or Caddick *et al.* that would lead the skilled person in the art to believe that the use of a controllable promoter system, such as the one described in Caddick *et al.* would overcome the effects of stunting seen by Willmitzer *et al* when they expressed invertase in tobacco or potato.

As stated on page 1 of our specification (lines 20-21) and as evidenced by the results shown in Figure 4, the invention as currently claimed provides a method of increasing yield whereby the deleterious effects observed by Willmitzer et al. are avoided. The beneficial effect of an increase in plant height that was observed when invertase is expressed under the *alc* switchable promoter system could not have been predicted by applying the teaching of Caddick et al. to the disclosure of Willmitzer *et al.* The Applicant respectfully submits that the invention as presently claimed is inventive in light over Willmitzer *et al.* as viewed in light of Caddick *et al.*

In view of the above amendments and remarks, it is submitted that the application is ready for allowance. If any additional information is needed, the Examiner is invited to call the undersigned attorney at (919) 541-8614.

Respectfully submitted,

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